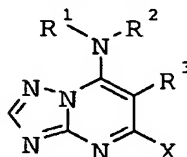


We claim:

1. A 5-alkyl-7-aminotriazolopyrimidine of the formula I,



I

10        where:

R<sup>1</sup>, R<sup>2</sup> are hydrogen, C<sub>1</sub>-C<sub>10</sub>-alkyl, C<sub>2</sub>-C<sub>10</sub>-alkenyl, C<sub>2</sub>-C<sub>10</sub>-alkynyl, C<sub>1</sub>-C<sub>10</sub>-haloalkyl, C<sub>3</sub>-C<sub>8</sub>-cycloalkyl, phenyl, naphthyl; or

5- or 6-membered saturated, unsaturated or aromatic heterocyclyl which contains one to four nitrogen atoms or one to three nitrogen atoms and one sulfur or oxygen atom; or

R<sup>1</sup> and R<sup>2</sup> together with the bridging nitrogen atom can form a 5- or 6-membered ring which contains one to four nitrogen atoms or one to three nitrogen atoms and one sulfur or oxygen atom;

if  $R^1$  and  $R^2$  are not hydrogen they can, independently of one another, be partially or fully halogenated and/or may carry one to three radicals from the group  $R^a$

R<sup>a</sup> is cyano, nitro, hydroxyl, C<sub>1</sub>-C<sub>6</sub>-alkyl, C<sub>1</sub>-C<sub>6</sub>-haloalkyl, C<sub>3</sub>-C<sub>6</sub>-cycloalkyl, C<sub>1</sub>-C<sub>6</sub>-alkoxy, C<sub>1</sub>-C<sub>6</sub>-haloalkoxy, C<sub>1</sub>-C<sub>6</sub>-alkylthio, C<sub>1</sub>-C<sub>6</sub>-alkylamino, di-C<sub>1</sub>-C<sub>6</sub>-alkylamino, C<sub>2</sub>-C<sub>6</sub>-alkenyl, C<sub>2</sub>-C<sub>6</sub>-alkenyloxy, C<sub>2</sub>-C<sub>6</sub>-alkynyl, C<sub>3</sub>-C<sub>6</sub>-alkynyloxy and unhalogenated or halogenated oxy-C<sub>1</sub>-C<sub>4</sub>-alkyleneoxy;

where these aliphatic, or alicyclic, groups for their part may be partially or fully halogenated or may carry one to three groups  $R^b$ :

R<sup>b</sup> is halogen, cyano, nitro, hydroxyl, mercapto, amino, carboxyl, aminocarbonyl, aminothiocarbonyl, alkyl, haloalkyl, alkenyl, alkenyloxy, alkynyloxy, alkoxy, haloalkoxy, alkylthio, alkylamino, dialkylamino, formyl, alkylcarbonyl, alkyl-

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- sulfonyl, alkylsulfoxyl, alkoxycarbonyl, alkylcarbonyloxy, alkylaminocarbonyl, dialkylaminocarbonyl, alkylaminothiocarbonyl, dialkylaminothiocarbonyl, where the alkyl groups in these radicals contain 1 to 6 carbon atoms and the alkenyl or alkynyl groups mentioned in these radicals contain 2 to 8 carbon atoms;
- and/or one to three of the following radicals:
- cycloalkyl, cycloalkoxy, heterocyclyl, heterocyclxy, where the cyclic systems contain 3 to 10 ring members; aryl, aryloxy, arylthio, aryl-C<sub>1</sub>-C<sub>6</sub>-alkoxy, aryl-C<sub>1</sub>-C<sub>6</sub>-alkyl, hetaryl, hetaryloxy, hetarylthio, where the aryl radicals preferably contain 6 to 10 ring members, the hetaryl radicals contain 5 or 6 ring members, where the cyclic systems may be partially or fully halogenated or may be substituted by alkyl or haloalkyl groups;
- R<sup>3</sup> is C<sub>3</sub>-C<sub>14</sub>-cycloalkyl or C<sub>6</sub>-C<sub>14</sub>-bicycloalkyl, where R<sup>3</sup> may be unsubstituted or partially or fully halogenated and/or may carry one to three radicals from the group R<sup>a</sup>; and
- X is C<sub>1</sub>-C<sub>6</sub>-alkyl or C<sub>1</sub>-C<sub>2</sub>-haloalkyl;
- and its salts.
2. A 5-alkyl-7-aminotriazolopyrimidine of the formula I as claimed in claim 1 where:
- R<sup>1</sup>, R<sup>2</sup> are hydrogen, C<sub>1</sub>-C<sub>10</sub>-alkyl, C<sub>2</sub>-C<sub>10</sub>-alkenyl, C<sub>2</sub>-C<sub>10</sub>-alkynyl, C<sub>1</sub>-C<sub>10</sub>-haloalkyl, C<sub>3</sub>-C<sub>8</sub>-cycloalkyl, phenyl, naphthyl; or
- 5- or 6-membered saturated, unsaturated or aromatic heterocyclyl which contains one to four nitrogen atoms or one to three nitrogen atoms and one sulfur or oxygen atom; or
- R<sup>1</sup> and R<sup>2</sup> together with the bridging nitrogen atom can form a 5- or 6-membered ring which contains one to four nitrogen atoms or one to three nitrogen atoms and one

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sulfur or oxygen atom;

if  $R^1$  and  $R^2$  are not hydrogen they can, independently of one another, be partially or fully halogenated and/or may carry one to three radicals from the group  $R^a$

$R^a$  is cyano, nitro, hydroxyl,  $C_1$ - $C_6$ -alkyl,  $C_1$ - $C_6$ -haloalkyl,  $C_3$ - $C_6$ -cycloalkyl,  $C_1$ - $C_6$ -alkoxy,  $C_1$ - $C_6$ -haloalkoxy,  $C_1$ - $C_6$ -alkylthio,  $C_1$ - $C_6$ -alkylamino, di- $C_1$ - $C_6$ -alkylamino,  $C_2$ - $C_6$ -alkenyl,  $C_2$ - $C_6$ -alkenyloxy,  $C_2$ - $C_6$ -alkynyl,  $C_3$ - $C_6$ -alkynyloxy and unhalogenated or halogenated oxy- $C_1$ - $C_4$ -alkyleneoxy;

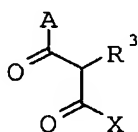
$R^3$  is  $C_3$ - $C_{14}$ -cycloalkyl or  $C_6$ - $C_{14}$ -bicycloalkyl, where  $R^3$  may be unsubstituted or partially or fully halogenated and/or may carry one to three radicals from the group  $R^a$ ; and

X is  $C_1$ - $C_6$ -alkyl;

and its salts.

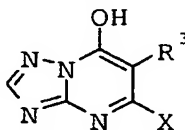
3. A compound of the formula I as claimed in claim 1 or 2 in which X is methyl.

4. A process for preparing compounds of the formula I as claimed in claim 1, which comprises cyclizing dicarbonyl compounds of the formula II



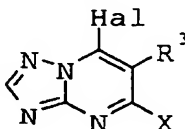
II

where A is  $C_1$ - $C_{10}$ -alkoxy and  $R^3$  and X are as defined for formula I with 3-amino-1,2,4-triazole to give 7-hydroxytriazolopyrimidines of the formula III



III

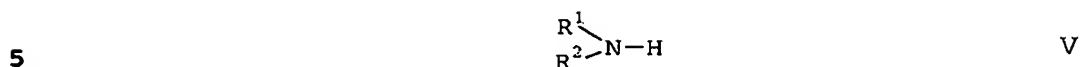
and halogenating III with a halogenating agent to give 7-halogenotriazolopyrimidines of the formula IV



IV

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where Hal is halogen, followed by reaction with an amine of the formula V



where R<sup>1</sup> and R<sup>2</sup> are as defined in formula I, to give 5-alkyl-7-aminotriazolopyrimidines of the formula I.

- 10 5. A compound of formula III or IV as defined in claim 4.
6. A composition suitable for controlling phytopathogenic harmful fungi, which composition comprises a solid or liquid carrier and a compound of the formula I as claimed in claim 1.
- 15 7. Seeds, comprising a compound of the formula I as claimed in claim 1 in an amount of from 0.001 to 1 g/kg.
- 20 8. The use of the compounds of the formula I as claimed in claim 1 for preparing a composition suitable for controlling harmful fungi.
9. A method for controlling phytopathogenic harmful fungi, which comprises treating the fungi or the materials, plants, the soil or the seeds to be protected against fungal attack with an effective amount of a compound of the formula I as claimed in claim 1.

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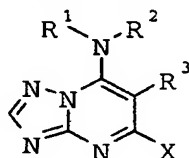
5-Alkyl-7-aminotriazolopyrimidines, processes and intermediates for their preparation, compositions comprising them and their use for controlling harmful fungi

5

Abstract

5-Alkyl-7-aminotriazolopyrimidines of the formula I,

10



I

where:

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$R^1, R^2$  are hydrogen, alkyl, alkenyl, alkynyl, haloalkyl, cycloalkyl, phenyl, naphthyl; 5- or 6-membered saturated, unsaturated or aromatic heterocyclyl which contains one to four nitrogen atoms or one to three nitrogen atoms and one sulfur or oxygen atom; or

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$R^1$  and  $R^2$  together with the bridging nitrogen atom can form a 5- or 6-membered ring which contains one to four nitrogen atoms or one to three nitrogen atoms and one sulfur or oxygen atom;

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$R^3$  is cycloalkyl or bicycloalkyl;

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where  $R^1$ ,  $R^2$  and  $R^3$  may be substituted as outlined in the description;

X is alkyl or haloalkyl;

and their salts;

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processes and intermediates for their preparation, compositions comprising them and their use for controlling phytopathogenic harmful fungi are described.

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